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EMIGRATION TO OTHER PLANETS: A PROSPECT PLANNED FOR THE FUTURE OF MANKIND

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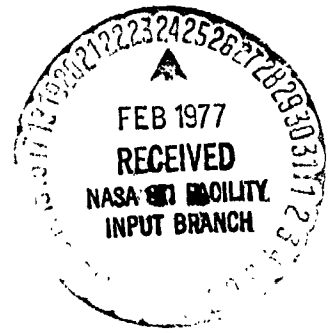

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16. Abstract

Emigration to other planets in the solar system in the next millenia is discussed. A discussion with the President of the Venezuelan Academy of Physical and Mathematical Sciences on this subject is described.

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EMIGRATION TO OTHER PLANETS: A PROSPECT PLANNED FOR THE FUTURE OF MANKIND

Aristedes Bastidas / 93*

The prospect of starting to emigrate to other planets in the next millenia is no longer a subject of science fiction, but an object of serious study in famous scientific centers. These centers have realized that, however effective the birth control /94 campaigns, human beings will continue to multiply until the inevitable moment when the Earth becomes too small for us.

At present we have not been lacking in criticism of the efforts of the United States and the Soviet Union to penetrate the secrets of space. These objections are that on Earth we have urgent problems such as cancer, and that as long as they are not solved, the money which is being spent on these vast research plans is simply wasted. I do not share this opinion. The fact that we are suffering immediate calamities should not be an obstacle preventing us from preparing to tackle the future ones. The space investigations which have begun under such good auspices do not predict a practical result for the present, but our descendants will thank us for many centuries, just as the Americans today are grateful to Columbus for his work. The planet on which we live is growing increasingly smaller, and we must lay the foundations which will enable mankind in the future to have the option of settling in other places of the Universe, so

* Numbers in margin indicate pagination in original foreign text.

that those who remain on the Earth are not suffocated by crowding. To achieve this goal, extraordinary studies will be needed, but every success may be hoped for from this apparently defenseless creature which is man, endowed with a developed brain, the most formidable instrument of creation which ever existed on this earth.

Eminent persons in the scientific field have already accepted as a fact that in a distant future interspace messages, radio transmitters and interplanetary television stations will act as liaison for the inhabitants of various celestial bodies with initial control on the Earth, until those who have left it produce descendants capable of living on Mars, for instance. This would be a need created by the fact that man who has been living on the Earth for five hundred thousand years, as a latecomer next to other creatures such as the tiger, which preceded it by several million centuries, must do away with threats to his survival. As Ilin said, man has no wings, but flies faster than all the birds; he is not a good swimmer, but moves under water at a speed greater than any fish. He does not possess the agility of animals and ungulates, but can walk faster than they.

We spoke of these aspects and others with Dr. Miguel Parra Leon, President of the Venezeluan Academy of Physical and /95
Mathematical Sciences, a distinguished thinker of the humanistic class, who aroused words of admiration from Professor Schwartz when he heard the speech of the Venezuelan at the inauguration of the Third Bolivian Mathematics Congress which has just been held in Caracas. Parra Leon is the author of an extraordinary book called "On Man's Itinery", worthy of the most distinguished library, because it deals with philosophic ideas, put in a simple and pleasant language with interesting aspects of the evolution of life on the Earth.

The evolution of the brain as we know it today has been complete since about, say, a hundred thousand years, and "Homo Sapiens" making use of this unprecedented sensory organ began the conquest of the Earth. Today he has almost completed it and is undertaking the conquest of space.

"Which is the first known creature that may be considered as our predecessor?"

"About two hundred million years ago, one of the Crossopterygii, the hogfish, emigrated over the edge of the continental platform with slow and uncertain steps. This was then our ancestor; during his adaptation, he acquired two small thin-walled balls at one end of its narrow brain: the cerebral hemispheres."

He said that the Batrachia or amphibians were the first vertebrates to emerge on the continent, but they remained and still remain closely bound to the aquatic medium. In the Carboniferous, and in the Permian age which followed it, a new biological explosion occurred leading to the appearance of reptiles "in direct line of our forefathers. The leap was considerable, since the reptile does not pass through the tadpole stage which forces the Batrachia to remain close to the water."

"What is the cause of this progress?"

"A change in the structure of the eggs. The Batrachia lay "aquatic" eggs, and the reptiles lay "aerial" eggs. The mammals appeared about 70 to 100 million years ago. This group achieved a greater development because of the perfected brain, and the sensory organs and the so-called "hot-blooded" high temperature chemical systems."

"How long did man's gestation period last?" /96

"The latest investigations completed make it possible to establish the hypothesis of transition between animal and man through a stage of humanization in which the hominoids (creature possessing a large brain) became continuously closer to man. According to G. Herberer, the evolution which culminated in man might have lasted from 400 to 600 thousand generations, that is to say, it lasted between 12 and 18 million years."

Dr. Parra Leon refers to the different phases of this evolution. He mentions the Proconsul, the Oreopithecia, the Australopithecia up to the "Homo Sapiens". The latter is a defenseless creature, but he possesses the ability to think, and to produce surprising products by utilizing this ability. Man progressed constantly up to the moment when Einstein established the theory of relativity. At that moment a change occurred in the world of learning. It is not possible, say the old doctors, that in 1905 this young man of 26 should tear down principles that have remained unaltered for thousands of years.

"Mathematics are no longer exact sciences", affirms our interviewee when recalling Einstein, "because they are based on a logic varying with the changes in our knowledge."

"Could you give an example?"

"Einstein is right: what was yesterday an irrefutable truth is today no longer so. Newton considered time and space as absolute; Einstein proved that this is not certain."

"Could you explain this phenomenon in a simple manner?"

"In the book, a differential equation expresses the elaspsed time of passengers in a spacecraft moving at velocities close to that of light. If the spacecraft is traveling to the Andromeda nebula (2,250,000 light-years), with an acceleration equal to the Earth's gravity over half the trajectory, and over the other half the same acceleration in delayed motion, the passengers traveling in the spacecraft will have aged about 28 years on reaching Andromeda."

"What is this due to?"

"This is due to the fact that at enormous velocities time elapses more slowly."

"Do you believe that we shall be migrating to other planets in the future?"

"Within a hundred years we shall have established colonies in outer space. I believe life will meet with less problems in the adaptation to media other than the Earth than those faced when, because of a biological explosion, the sea was abandoned 400 million years ago.

Dr. Parra Leon is a dynamic student in all the areas of his competence. What I offer here are light notes from his thick book, whose brilliance the reader may judge through the sample which he was generous enough to give us with his statements.